UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,083	09/23/2005	Takashi Kunimori	070759-0030	2700

20277   7590   08/22/2007
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EXAMINER
GODLEWSKI, JAMES A

ART UNIT	PAPER NUMBER
2609	

MAIL DATE	DELIVERY MODE
08/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

		Application No.	Applicant(s)
Office Action Summary		10/531,083	KUNIMORI ET AL.
		Examiner	Art Unit	
		James Godlewski	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>23 September 2005</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1 and 3-7</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1 and 3-7</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>23 September 2005</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☒ All   b) ☐ Some * c) ☐ None of:

　　　1. ☒ Certified copies of the priority documents have been received.

　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.   **Claim 1, 3, 4, 5, 6, & 7** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Johnson et al. US Patent 6,304,254 (hereafter referenced as

Johnson), in view of Matsumoto et al., US Patent 5,606,632 (hereafter referenced as

Matsumoto), further in view of Moghimi "Curing comparator Instability with Hysteresis".

Regarding **claim 1**, Johnson discloses in column 5 lines 64-67 & column 6 lines

1-3 the invention relates to an LC display device based on "in plane switching", in which

the switching speed is increased by overdriving the pixels upon a change of the voltage

across these pixels while taking, for example the hydrodynamical properties of the LC

material into account. The correction means may also be used to correct for changes of

ambient or liquid temperature. This system is illustrated in Figures 1-9.

This reads on "liquid crystal panel drive device that achieves overdriving by using

a frame memory and a lookup table," Figure 7 element 32 field delay reads on frame

memory, and element 41 is a lookup table, New Data in reads on "input data", and Old

Data in reads on "previous-frame data". This system is illustrated in Figures 1-9. As for

"wherein a plurality of lookup tables are provided so as to correspond to different

temperatures, and the lookup tables are switched from one to another so that one of the

lookup tables is selectively used according to information indicating an ambient temperature, and wherein the lookup tables are switched from one to another". Matsumoto teaches a system containing many lookup tables, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Johnson by Matsumoto to include the use multiple lookup tables for the purpose of accuracy and speed. This is a common programming practice and is referred to as a 2 or 3 dimensional table (2 or 3 dimensional lookup table, sometimes referenced as a "table"). As for, "with hysteresis secured in between." Moghimi discloses in a published article in Analog Dialogue 34-7(2000) paragraphs 6-7, that hysteresis can be an effective solution to clean up noisy signals. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Johnson and Matsumoto by Moghimi to include the use hysteresis for the purpose of signal conditioning and processing.

Regarding **claim 2**, cancelled by applicant.

Regarding **claim 3**, Johnson does not disclose, the use of multiple lookup tables, "wherein, based on a first lookup table corresponding to a first temperature and a second lookup table corresponding to a second temperature immediately above or below the first temperature, an interpolated amount of overdrive corresponding to a temperature between the first and second temperatures is calculated."

In the related art of display systems Matsumoto discloses in column 1 lines 65-67 & column 2 lines 1-16 that multiple lookup tables can be used to calculated and store values, translation between the table entries reads on storing values and lookup tables

are interpreted as storage devices. This reads on, "wherein, based on a first lookup table corresponding to a first temperature and a second lookup table corresponding to a second temperature immediately above or below the first temperature, an interpolated amount of overdrive corresponding to a temperature between the first and second temperatures is calculated." It would have been obvious to one of ordinary skill in the art at the time of invention to combine Johnson by Matsumoto to use multiple lookup tables in combination with a temperature input for the purpose of interpolation calculations resulting in increased switching speed as the correction/calculation means compensates for ambient or liquid temperature.

Regarding **claim 4**, Johnson does not disclose, "wherein a first storage device in which the plurality of lookup tables are stored and a second storage device, having a smaller storage capacity than the first storage device, for storing a lookup table read out from the first storage device are provided, and a predetermined number, corresponding to the ambient temperature, of lookup tables are read out from the first storage device and stored in the second lookup table."

In the related art of display systems Matsumoto discloses in column 1 lines 65-67 & column 2 lines 1-16 that multiple lookup tables can be used to calculated and store values, translation between the table entries reads on storing values and lookup tables are interpreted as storage devices. This reads on, "wherein a first storage device in which the plurality of lookup tables are stored and a second storage device, having a smaller storage capacity than the first storage device, for storing a lookup table read out from the first storage device are provided, and a predetermined number, corresponding

to the ambient temperature, of lookup tables are read out from the first storage device and stored in the second lookup table." It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Johnson, Matsumoto, and Moghimi with the teaching of Matsumoto to include the use of storing data in multiple lookup tables, for the purpose of speed, calculations and table size limitations.

Regarding **claim 5**, Johnson does not disclose, "wherein, when lookup tables are read out from the first storage device and stored in the second storage device, corrections are made according to temperature information."

In the related art of display systems Matsumoto discloses in column 1 lines 65-67 & column 2 lines 1-16 that multiple lookup tables can be used to calculated and store values, translation between the table entries reads on storing values and lookup tables are interpreted as storage devices. This reads on, "wherein, when lookup tables are read out from the first storage device and stored in the second storage device, corrections are made according to temperature information." It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Johnson, Matsumoto, and Moghimi with the teaching of Matsumoto, to use multiple lookup tables in combination switched selectively with a temperature input for the purpose of corrections made in regard to temperature resulting in increased switching speed as the correction/calculation means compensates for ambient or liquid temperature.

Regarding **claim 6**, Johnson discloses in column 5 lines 64-67 & column 6 lines 1-3 & column 2 lines 33-35 the invention relates to an LC display device based on "in

plane switching", in which the switching speed is increased by overdriving the pixels

upon a change of the voltage across these pixels while taking, for example the

hydrodynamical properties of the LC material into account. The correction means may

also be used to correct for changes of ambient or liquid temperature. As printed in

Figure 7 (Johnson) New Data in reads on "input data", Old Data in reads on "previous-

frame data", and Field delay reads on frame memory. This system is illustrated in

Figures 1-9.

This reads on, "A liquid crystal panel drive device that achieves overdriving by

using a frame memory and a lookup table," and "are provided so as to correspond to

different temperatures" and "so that one of the lookup tables is selectively used

according to information indicating an ambient temperature, and wherein the lookup

table is fed with part of previous-frame data read out from the frame memory and part of

input data, and data for overdriving is generated based on another part of the input data

which is not fed to the lookup table and output data from the lookup table."

Johnson does not disclose the following, "wherein a plurality of lookup tables"

and "lookup tables are switched from one to another".

In the related art of display systems Matsumoto discloses in column 1 lines 65-67

& column 2 lines 1-16 that multiple lookup tables can be used to calculated and store

values, translation between the table entries reads on switching tables and storing

values and lookup tables are interpreted as storage devices. This reads on, "wherein a

plurality of lookup tables" and "lookup tables are switched from one to another". It

would have been obvious to one of ordinary skill in the art at the time of invention to

combine Johnson by Matsumoto to use multiple lookup tables in combination switched

selectively with a temperature input for the purpose of corrections made in regard to

temperature resulting in increased switching speed as the correction/calculation means

compensates for ambient or liquid temperature.

Regarding **claim 7**, Johnson discloses in column 5 lines 64-67 & column 6 lines

1-3 & column 2 lines 33-35 the invention relates to an LC display device based on "in

plane switching", in which the switching speed is increased by overdriving the pixels

upon a change of the voltage across these pixels while taking, for example the

hydrodynamical properties of the LC material into account. The correction means may

also be used to correct for changes of ambient or liquid temperature. As printed in

Figure 7 (Johnson) New Data in reads on "input data", Old Data in reads on "previous-

frame data", and Field delay reads on frame memory. This system is illustrated in

Figures 1-9.

This reads on, "A liquid crystal panel drive device that achieves overdriving by

using a frame memory and a lookup table".

Johnson does not disclose, "wherein a plurality of lookup tables are provided so

as to correspond to different temperatures, and the lookup tables are switched from one

to another so that one of the lookup tables is selectively used according to information

indicating an ambient temperature, and wherein the lookup table is fed with part of

previous-frame data read out from the frame memory and part of input data, output data

from the lookup table is so set that part thereof is used as complementary data,

correction data is generated based on another part of the input data which is not fed to

the lookup table and the part of the output data from the lookup table which is used as the complementary data, and data for overdriving is generated based on the correction data and non-complementary part data from the lookup table."

In the related art of display systems Matsumoto discloses in column 1 lines 65-67 & column 2 lines 1-16 that multiple lookup tables can be used to calculated and store values, translation between the table entries reads on switching tables and storing values and lookup tables are interpreted as storage devices. This reads on, "wherein a plurality of lookup tables are provided so as to correspond to different temperatures, and the lookup tables are switched from one to another so that one of the lookup tables is selectively used according to information indicating an ambient temperature, and wherein the lookup table is fed with part of previous-frame data read out from the frame memory and part of input data, output data from the lookup table is so set that part thereof is used as complementary data, correction data is generated based on another part of the input data which is not fed to the lookup table and the part of the output data from the lookup table which is used as the complementary data, and data for overdriving is generated based on the correction data and non-complementary part data from the lookup table." It would have been obvious to one of ordinary skill in the art at the time of invention to combine Johnson by Matsumoto to use multiple lookup tables in combination switched selectively with a temperature input for the purpose of corrections made in regard to temperature resulting in increased switching speed as the correction/calculation means compensates for ambient or liquid temperature. In addition, the applicant discloses on page 7 lines 2-10 "This complementary data

corresponds to the aforementioned cliffs (or slopes)." and "the lower 24 bits (complementary data) of the lookup table are fed to a calculation". It would have been obvious to one of ordinary skill in the art at the time of invention to combine the combination of Johnson and Matsumoto with data manipulation techniques, such as down sampling, up sampling, and interpolation to calculate the complementary data. This reads on, "complementary data."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Godlewski whose telephone number is 571-270-3256. The examiner can normally be reached on Monday-Friday, 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Pendleton can be reached on 571-272-7527. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JG

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SUPERVISORY PATENT EXAMINER